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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,887	10/29/2003	Leszek Cieplinski	1906-0129P	4115

2292 7590 09/20/2006

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EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/694,887	CIEPLINSKI ET AL.	
	Examiner	Art Unit	
	Nancy Bitar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/29/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/16/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

2. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
 (1) Field of the Invention.
 (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING (S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4)

because reference character "8" has been used to designate both video database and

image database (see page 7, lines 14-20 in specification). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 11 and 13-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites an apparatus adapted to implement a method as claimed in claim 1. There is no features of an apparatus recited either structurally or functionally. Note that the apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP 2114.

Claim 13 recites a computer system programmed to operate to a method as claimed in claim 1. There are no features of an apparatus recited either structurally or

functionally. Note that the apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP 2114.

Claim 14 is an apparatus and a method in a single claim, but, since the claim does not set forth any steps provides for the use of both an apparatus involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. See MPEP 2173.05(o).

The recitation at line 2 of claim 14 of "storing computer-executable process steps" is unclear, because no such steps are defined or previously recited in claim 1 or claim 12, from which claim 14 variously depends. Because no "process steps" are defined by or recited in the preceding claim language, it is unclear what feature or element this claim language, is further defining, so that the claim fails to clearly point out and distinctly claim applicant's invention.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs, which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and

> Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

6. Claim(s) 12 and 14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows.

Claim 12 defines" a computer program" embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claim a computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper

definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-9,11-15, are rejected under 35 U.S.C. 102(b) as being anticipated by Hori et al (EP 1 154 379 A2)

As to claim 1, Hori et al. discloses a method of representing motion of an object appearing in a sequence of images comprising deriving for each image a set of representative points (extracting a plurality of points representing the figure for each of the frames, see column 3, lines 41-42) representing the location of the object (data indicating positions of the plurality of points, see column 3,lines 45-46),
deriving an approximate function representing the trajectory of a representative point in two or more of said sequence of images (The representative point trajectory function approximating device 104 approximates a time series of the positions of the representative points extracted at the figure representative point extracting device 103,see column 10, lines 33-37),

and calculating an error value for said approximate function for the representative point for an image (describing the object region data using the functions, see column 3, lines 47-48, In Step S603, an approximation error $e_{(j)}$ (j=0,1,.....,M-1)of the approximate function is calculated, see column 15,lines 17-21, note that the approximation device 102 outputs information about the approximate figure for one frame, see column 10,lines 27-29)),

characterized in that the error value is based on the change in area of the object as represented by the representative point and the area of the object with the representative point replaced by the respective approximate function value ($(e_{(j)} = \max | v_{(j)\,th} - F_{(j)\,tk,\,ti}(th) |$,see column 15 line 21,note that the method creates an initial approximation polygon for the object region and then decreasing the number of vertexes of the approximate polygon so that the difference in area between the object region and the approximate polygon may lie within a reference, see column 9,lines 38-45).

As to claim 2, Hori et al. teaches a method as claimed in claim 1 wherein the error value is based on the change in area in an image (step S603, figure 7, $(e_{(j)} = \max | v_{(j)\,th} - F_{(j)\,tk,\,ti}(th) |$,see column 15 line 21,note that change of region is denoted as change of area and note that the approximate function $v_{(j)t}$ found over the section ranging from t_a to t_b is denoted by $F_{(j)\,ta,\,tb}(t)$ (j = 0, 1, ..., M-1), the starting point $v_{(j)K}$ is denoted by $F_{(j)\,tk,\,ti}(tk)$,and the ending point $v_{(j)i}$ is denoted by $F_{(j)\,tk,\,ti}(tj)$, see column 15 lines 12-16).

As to claim 3, Hori et al. teaches a method as claimed in claim 1 wherein the error

value is based on the change in area in a plurality of images (step S603,figure 7, $(e_{(j)} = \max | v_{(j)\,th} - F_{(j)\,tk,\,ti}(th) |$,see column 15 line 21,note that change of region is denoted as change of area and note that the approximate function $v_{(j)t}$ found over the section ranging from t_a to t_b is denoted by $F_{(j)\,ta,\,tb}(t)$ (j = 0, 1, ..., M-1), the starting point $v_{(j)K}$ is denoted by $F_{(j)\,tk,\,ti}(tk)$,and the ending point $v_{(j)i}$ is denoted by $F_{(j)\,tk,\,ti}(tj)$, see column 15 lines 12-16).

. As to claim 4, Hori et al. teaches a method as claimed in claim 1 wherein a function approximation is derived for each co-ordinate of a representative point (each representative point is represented by the horizontal coordinate axis X and the vertical coordinate axis Y, see column 10, lines 30-32)

As to claim 5, Hori et al. teaches a method as claimed in claim 1 wherein a function approximation is derived for each representative point (step S4,figure 2,note that this function is expressed for each representative point and differs in expression, see column 10,lines 41-43)

As to claim 6, Hori et al. teaches a method as claimed in claim 1 wherein a function approximation is done for representative points independently (a straight line or a spline curve may be used as **a** function representing **a** representative point trajectory, see column 10, lines 50-52).

As to claim 7, Hori et al. teaches in figure 5 a method as claimed in claim 1 wherein a function approximation is done for two or more vertices in conjunction (the vector from vertex V0 to V1 is denoted by V0,1 and vector $V_{1,2}$,$V_{2,3}$,.....,$V_{M-2,M-1}$ are determined, see column 14, lines 19-20,note that the function approximation device 104

calculates an approximation function 503 that expresses the values of the X-component and Y-component of each vector, see column 14, lines 28-31).

As to claim 8,Hori et al teaches a method as claimed in claim 1 wherein the error value for an image is based on a function of the number of pixels (generating and storing a bit map on which"1" corresponds to the interior of each object, see column 45, lines 53-55) that are in the modified object outline(manually inputting the contour, object regions may be obtained automatically by executing an image processing, see column 45 lines 48-49) replacing a representative point by the function approximation value of the representative point but not the original outline and the number of pixels that are in the original outline but not in the modified outline (fitting an inputted contour to the contour line of the object in an image by means of a technique using a dynamic outline model referred to as Snakes, the interior of the contour thus fitted may be set as an object regions, see column 45, lines 41-44) .

As to claim 9,Hori et al teaches in figure 8 a method of identifying selection of an object in an image in a sequence of images, wherein the object motion has a representation derived using a method as claimed in claim 1(as rejected in claim 1 above), the method comprising identifying a selected region of the image(700), determining the location of said object in said image using said motion descriptor (704,note that the representative point trajectory 704 describes the trajectory of a representative point, see column 16, lines 42-43),note that minimum rectangle or polygon as encloses the whole of each object trajectory is compared with the inputted coordinate and only objects included in the smallest rectangle or polygon which

encloses the whole trajectory are extracted (the number of extracted objects may be 0, 1, or more), see column 30, lines 43-48)

As to claim 11, Hori et al. teaches an apparatus adapted to implement a method as claimed in claim 1(figure 58 shows one example of the processing procedure of the object region data crating apparatus according to the embodiment, see column 45, lines 31-33).

As to claim 12, Hori et al teaches a computer program for implementing a method as claimed in claim1 (the present invention can be implemented wither in hardware or software in a general purpose computer, see column 4 , lines 33-35)

As to claim 13, Hori et al. teaches a computer system programmed to operate according to a method as claimed in claim 1(computer carry out a specific operation, see column 21, lines 11-12).

As to claim 14, Hori et al teaches a computer-readable storage medium storing computer-executable process steps for implementing a method as claimed in claim 1(see rejection of claim 1 above) or storing a program as claimed in claim 12 (the method and apparatus of the present invention apply to a computer-readable recording medium in which a program is recorded that causes a computer to execute a procedure equivalent to the present invention, see column 57,lines 52-55).

As to claim 15, Hori et al.teaches in figure 8 a descriptor of motion (related information is attached to the object region data, column 20, lines 56-58) of an object in a sequence of images derived by a method according to claim 1 (database including related information about individual objects exists independently from the object region

data, see column 20, lines 56-58) .Note, applicant discloses in the specs[0028] that a descriptor database 10 storing descriptors of objects or parts of objects appearing in images stored in the image database 8).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hori et al in view of Cieplinski et al (WO 00/67203).

As to claim 10, note the discussion of Hori et al above, Hori et al disclose the method of representing motion of an object as recited in claim 1 with exception of describing the limitation "searching a query object motion". For example, Hori discloses a method searching for sequences of images by processing signals corresponding to images (the information processing system that handles the video data and its object region data, an object close to the specified position can be searched for using these three-dimensional data items and step S2700,positional information about the specified object to be searched for is inputted, see column 25, lines 10-18) but does not mention the input of the query object motion and deriving a representation based on the method. Cieplinski et al in figure 3, teaches a method of searching for sequences of images (202,display search images) by processing signals corresponding to images (the invention also provides a method of searching for images using such descriptors, page

3,lines 15-16), the method comprising inputting a query object motion (206, retrieve descriptor for query image region), deriving a representation of the query object motion(208, derive matching values M for each descriptor in descriptor database), comparing the representation with representations derived using a method as claimed in claim 1(210,order matching values), and selecting and displaying those sequences of images for which the representations indicate a degree of similarity to the query(212,display K images corresponding to K highest matching values). Note that searching techniques based on image content for retrieving still images and video from, for example, multimedia databases are known. Various image features, including color, texture, edge information, shape and motion, have been used for that techniques, see page 1, lines 6-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the searching techniques based on image content for retrieving still images and video from, as taught by Cieplinski et al for example, multimedia databases are known (page 1,lines 6-10) to the information processing system of Hori because the information processing system handles the video data and its object region data, where the object close position can be searched (column 25, lines 10-15).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thomas et al. (US-6, 005,639) is cited to teach a method for assigning a motion vector to a region of an interpolated output video image.

Echigo et al (US-2002/0159637) is cited to teach the extraction and distribution of image region segment from a video image.

De Haan et al. (US-6, 487,313) teaches a method of locating problem area in an image signal.

Inquiries

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 5712701041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on 5712720000. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nancy Bitar 06/01/2006

Chanh Nguyen

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